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TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—Our Forest Interests.—The Training of Gardeners.—Michaux's American Garden 601
Abraham's Oak (Illustrated.) 602
The Art of Gardening—An Historical Sketch.—XV. *Mrs. Schuyler Van Rensselaer.* 602
Holiday Notes in Southern France and Northern Italy.—VIII. *George Nicholson.* 603
ENTOMOLOGICAL:—A Tulip Tree Leaf Destroyer. (With Figure) . . . *J. G. Jack.* 604
FOREIGN CORRESPONDENCE:—London Letter . . . . . *W. Watson.* 605
CULTURAL DEPARTMENT:—Christmas Roses . . . . . *D. Dewar, O.* 607
Leading American Apples . . . . . *T. H. Hoskins, M.D.* 608
Orchid Notes . . . . . *John Weathers, F. Goldring.* 609
Heating Green-houses . . . . . *W. H. Taplin.* 609
Propagating . . . . . *W. H. Taplin.* 610
Chrysanthemums . . . . . *T. D. H.* 610
Carnations . . . . . *John Thorpe.* 610
Kalanchoe carnea . . . . . *J. N. Gerard.* 610
CORRESPONDENCE:—December in California . . . . . *Charles H. Shinn.* 610
Trees and Telegraph Wires . . . . . *Professor W. W. Bailey.* 610
A New Station for Polypodium Scouleri . . . . . *Lorenzo G. Yates.* 611
A Good Native Shrub . . . . . *E. Lewis Sturtevant.* 611
PERIODICAL LITERATURE 611
NOTES 612
ILLUSTRATIONS:—Cecidomyia liriodendri, Fig. 152 605
Abraham's Oak, Fig. 153 607

Our Forest Interests.

WHEN forestry is first brought to their attention many persons think chiefly of tree-planting, of the effect of forests on rainfall, and other things which are not essential or of the greatest practical importance. Their first impressions are likely to be superficial and inadequate. The question of the effect of forests on rainfall has not been determined. It is a matter for accurate and continued scientific investigation, without which all opinions and theories regarding the subject are alike worthless, because they cannot be verified. The point of general practical interest here is the function of forests, especially of mountain forests, in the distribution of the water that falls upon them as rain or snow. The doctrine of rational and practical forestry regarding this matter is, that forests retain the water in the spongy mass of their floor, retarding its descent to the channels of streams, and thus prevent or modify both freshets and drought. This effect of the forests upon the streams which have their sources in them is of great practical value; it is not beyond the range of popular appreciation, but can be verified, without special scientific training, by any observing person who will go into the woods in a hill-country during a heavy rainfall. This is one of the essential facts or fundamental principles of forestry, and it should be urged upon popular attention until it is "in the air" everywhere, a part of the universal thought and established knowledge of the time.

Tree-planting on a small scale, if intelligently and carefully done, would be useful almost anywhere as an educational experiment. It would help to awaken and increase interest in subjects connected with the care and uses of trees, and it should everywhere be encouraged. But it is not forestry, is not necessarily any part or feature of it, and it is not best that people should take one thing for another without knowing it. In all the eastern part of our country the trees will come in again, and the forests reproduce themselves, if they are cut off in the right way, and the land is afterward guarded from fire and pasturage, and this natural perpetuation of the forest is of far greater importance here than planting trees.

Looking at forest interests in this country in a practical way, it is plain that the care of individual holdings of timber-lands, and the methods best adapted to perpetuate the growth and production of timber on the farms of the United States, are matters of great and increasing importance. The existing condition and practice are unsatisfactory, because there is, generally, very little system, plan or management. The future is largely left to chance, or to take care of itself. This branch of forestry is obviously a part of agriculture. It is chiefly an economical subject, and there is not much need or room for sentiment or mystery connected with it. It has not yet begun to receive adequate attention among the farmers of our country. The diffusion of knowledge and propagation of sound and practical ideas regarding the care of farm woodlands, and the value of timber as a permanent crop, should be a prominent feature of the work of the Granges and other organizations of farmers, as well as of local and state forestry associations.

The value of mountain forests, and the necessity of maintaining forest-conditions permanently on lands around the sources of mountain streams, are most vital and important features of scientific and practical forestry. They urgently require attention in this state, in Pennsylvania, New Hampshire and the other states intersected by our eastern mountain-system. The effects of the permanent destruction of forest-conditions over large areas of mountain country are so far-reaching and fatal that indifference and inattention constitute a crime against civilization and the nation's life. The fate of the mountain forests on the lands which still belong to the nation is one of the most momentous of all the problems now presented to the American people, and its decision will determine the future of vast areas in the western part of our country, whether they shall be fertile, populous and prosperous, or irreclaimably barren, and, in large degree, uninhabitable. The danger, and the necessity of prompt action in withdrawing the forest-lands of the public domain from sale, and of guarding them effectively from spoliation until a competent commission decides what portions should be kept permanently in forest, and presents a plan for national forest-management, should be urged upon Congress and the President by the people and press of the entire country in the most direct, clear and forcible manner.

The herbariums entered for the prize offered by Mr. Peter Henderson made one of the most interesting features of the exhibition at the last meeting of the Society of American Florists. The collection which won the first premium was the work of a young gardener, and it is described by a correspondent of *The American Florist* as consisting of good, typical specimens, carefully mounted, correctly named, neatly tied in folios marked with outside labels to indicate the natural orders, arranged in botanical sequence and with a full index, and placed in an attractive and serviceable cabinet. Now, herbariums in themselves are of little practical value unless they are large and are used systematically. But when a young man sets out in serious earnest to make a good collection of well-preserved plants, the training which he receives in cultivating habits of observation, order and accuracy, and in acquiring a general knowledge of plants, will be of immense value to him all the rest of his life. In some of the establishments of Europe the making of herbariums has been long considered a valuable aid in the education of gardeners. In the article referred to we are told that Mr. Henderson himself received two medals for similar work before he was eighteen years old, and he testifies that the interested and careful preparation of these specimens did much toward developing methodical habits and laying the foundation for business success. There are many indications of a growing belief that the prosperous gardener of the future will be a man who has made some progress in the sciences related to horticulture, and who has enjoyed some special training in the art. The collection and

care of dried specimens is not enough to make a good gardener; but it is one means of developing a love for plants, of increasing a knowledge of them, and of inculcating lessons of orderliness and accuracy which will prove of lasting value to every one who expects to be a gardener or florist.

There appears in the "Annals" of New York city for the year 1786, compiled from the newspapers of the day, joined to the reprint of the New York Directory for 1786, recently issued by the Trow Directory Co., the following item:

April 14th, 1786.

"Mr. Michaux, botanist to his most Christian Majesty, having purchased a lot of ground at Wehocken, near the Three Pigeons, is erecting a garden there which for magnificence, etc., will exceed anything of the kind in America. In it will be introduced many exotic and domestic botanical curiosities."

This Mr. Michaux is the distinguished French botanist, André Michaux, who resided in America from 1785 to 1796 as an agent of the French Government for exploring the natural resources of this country, and for the introduction of useful trees and other plants into France. An account of this garden, from the pen of Mr. H. H. Rushby, was published in the *Bulletin of the Torrey Botanical Club*, in August, 1884, from which it appears that when Michaux finally left America it was transferred to a Mr. Saunier, and later to a son of the latter, who continued to send plants to France for many years. Michaux's garden now forms a part of the Hoboken Cemetery, and all traces of the plants brought here by Michaux from his long journeys in remote parts of the country have now entirely disappeared.

Abraham's Oak.

THE old Oak at Mamre in Syria, or, as it is known everywhere, "Abraham's Oak," is one of the most famous and venerable trees in the world. It is reverenced alike by Jew, Christian and Mahommedan, for it is supposed to mark the spot where the patriarch pitched his tent in the desert. There is a superstition in Jerusalem, and in all the country about, that whoever shall cut or injure this tree will lose his first-born son. So for centuries it has been allowed to toss its gnarled and contorted limbs in the gales which sweep from the Mediterranean over the Syrian plains.

This tree was visited by Sir Joseph Hooker in the autumn of 1860; and in his paper upon Syrian Oaks, read the following year before the Linnæan Society (*Transactions*, xxiii.), he gave a description of it and a portrait drawn by his own hand.

Abraham's Oak was found to belong to *Quercus pseudo-coccifera*, which, to quote from Sir Joseph's paper, "is by far the most abundant tree throughout Syria, covering the rocky hills, of Palestine especially, with a dense brushwood of trees eight to twelve feet high, branching from the base, thickly covered with small evergreen rigid leaves, and bearing acorns copiously. On Mt. Carmel it forms nine-tenths of the shrubby vegetation, and it is almost equally abundant on the west flanks of the Antilebanon and many slopes and valleys of Lebanon. Owing to the indiscriminate destruction of the forests in Syria, this oak rarely attains its full size." The circumference of the trunk of "Abraham's Oak" is given as twenty-three feet, and the diameter of the spread of the branches as ninety feet.

Quercus pseudo-coccifera is an evergreen species with the general appearance of the Ilex of southern Europe, and closely related, botanically, to *Q. coccifera*, a common and widely distributed scrub Oak of southern Europe, and of Algeria; indeed, Hooker was of the opinion that the two plants were merely geographical varieties of the same species.

Our illustration of "Abraham's Oak," upon page 607, represents the tree with much less foliage than appeared in Hooker's picture taken nearly thirty years ago, when it was apparently in a more vigorous condition than at the time when the recent photograph from which our illustration is made was taken. We are indebted for this photograph to Mr. Francis Skinner, of Boston.

The Art of Gardening—An Historical Sketch.

XV.—Rome.

(Concluded.)

IN his catalogue of trees, the elder Pliny names many varieties—eighteen kinds of Chestnut, for instance, eleven kinds of Myrtle, thirteen Laurels, four Elms, three kinds of Box, twenty-nine Figs and forty-one Pears. But even if such numbers represent garden varieties which we should now call distinct, they are not, in most cases, very imposing compared with the riches of to-day; indeed when we consider the number of distinct kinds, it is very apparent that in trees and shrubs as well as in flowers the wealthiest Romans could not command a hundredth part of the material that is easily procured to-day. Yet many of them were passionate horticulturists and such exotic plants as could be procured were highly prized. The Plane, according to Pliny, was among the first trees to be introduced, simply, as he is careful to explain, for its ornamental value. It came from the Levant by way of Sicily, and the Cypress and Cedar were likewise foreigners, though they now grow apparently wild in many parts of Italy. The Balsamum, "a plant that has been bestowed by Nature only upon the land of Judea," where "in former times it was cultivated in two gardens only, both of which belonged to the kings of that country," was "exhibited in Rome" by Vespasian and Titus; and its cuttings were so valuable that "the fifth year after the conquest of Judea these cuttings, with their suckers, sold for the price of 800,000 sesterces." The Balsamum got this extraordinary value as the source of a favorite kind of incense,* but many other shrubs "were introduced for ornamental gardening," and after the time of Pompey it was the custom to carry foreign trees in the triumphal processions. On the walls of the villa of Livia, the Laurel, the Pomegranate, the Stone Pine, the Ilex, the Plane, the Myrtle, the Cypress, a species of Cherry and three different kinds of Firs are accurately portrayed. Ivy and other evergreen vines, as well as the Acanthus and the Grape, were everywhere trained upon walls and trees in the most ingenious ways, and Grapes, Gherkins and Watermelons are named among the fruits forced under glass. Olive-trees, of course, were everywhere, and Plums and Apples, as well as Pears, were cultivated in manifold varieties. Pliny asks us to believe that there stood at Tibur a tree which bore every known kind of fruit, and it is certain that grafting was constantly and skillfully practiced. The Peach had been introduced from Persia, as is shown by its name—*Persicum*. Vitellius, who had been legate in Syria, introduced many Syrian varieties of the Fig into his country-seat at Alba. The Ash, the Oak, the Mulberry, the Quince, the Walnut and the Almond were other familiar trees, and the Palm was planted here and there, but as a rule seems to have been imported from Syria and Egypt and grown in pots. I may say again that neither in Greece nor in Italy was a distinction made between ornamental and useful trees. Any tree of pleasing aspect was thought appropriate to the pleasure-ground, and was but the more highly valued if it served utility as well as beauty.

An amusing anecdote told by Pliny the Elder shows the estimation in which exceptionally fine trees were held. Cneius Domitius publicly rebuked Crassus for living in a house so magnificent that he himself would be willing to pay ten million sesterces for it. Crassus replied that, deducting six trees only, he would accept the offer. Domitius declared that on those terms he would not give a single denarius, whereupon Crassus exclaimed: "Well, then, which of us sets a bad example and deserves the reproof of the censors—I, who live like a plain man in a house which has come to me by inheritance, or you, who estimate six trees at a value of ten million sesterces?"

These trees, adds Pliny, "were of a Lotus kind, and by the exuberance of their branches afforded a most delightful shade."† They must have stood in an urban garden, for "they were in all the freshness of youth when Nero burned them."

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* Unguents, says Pliny, were not known in the West until Alexander captured the perfume chest of Darius. But in imperial times their use was so common that a score of spots on the Mediterranean coast and islands were famous for their manufacture, and the love for them gave a great impulse in Italy to the cultivation of plants with sweet-scented leaves.

† It was this Lotus-tree and not the aquatic plant called by the same name which furnished the *lotophagi* with the food which obliterated memory. Some writers have thought it the Celtis, but modern authorities identify it with the *Rhamnus Lotus* of Linnæus, now known as *Zizyphus Lotus*.

In the most distant northern countries conquered by the Romans—all along the Rhine, all through France, and in many parts of England—lie the remains of great villas, the architectural magnificence of which must have been supported by pleasure-grounds of corresponding beauty. No excavations can help us to recover, in the art of gardening, a single relic of the designs of days so long gone by. We can easily imagine, however, how the Roman horticulturist consoled himself in his exile, now by forcing the products of an alien clime into a likeness with the garden effects that he had loved at home, and now in devising new effects which should display these products in a characteristic way, appropriate to the more northern climate and the wilder landscape. And a sign of his labors everywhere persists in the presence of many trees, now apparently native to the soil, which history or tradition tells us he was the first to introduce.*

In the history of the eastern and southern provinces the work of the Roman gardener is constantly recorded. Of course it was often modified by those ideas of Greek or Persian origin which he found already prevalent, but there can have been no town in the civilized world during the first three centuries of our era which the combined influence of Persia and Rome had not richly ornamented. Ephesus, Smyrna, Miletus and Antioch were especially famous for their gardens, and at Pergamon, where the ruins of the magnificent temple commemorating victories over the invading Gauls have recently been unearthed, the main structure was encircled by vast pleasure-grounds, where stood the library and other public buildings. Even the bitterest enemies of Rome in Asia felt the common impulse. Strabo mentions at Cabeira "the palace of Mithridates, the water-mill, the park for keeping wild animals and the hunting-ground in the neighborhood;" and Pliny tells us that the great Parthian king and his people used their utmost efforts to grow the Myrtle and the Laurel, plants everywhere desired for use in religious ceremonials.

The fullest description of an Oriental pleasure-ground of this period which I have been able to find is the one which Diodorus gives of Panara, in the island of Panchæa, off the coast of Arabia Felix, where, of course, Persian influence had been at work. I quote it as an interesting contrast to the younger Pliny's account of his Tuscan villa:

"The fields round about the temple are planted with all sorts of trees, not only for fruit, but for pleasure and delight, for they abound with tall Cypresses and Plane-trees, Laurels and Myrtles. . . . Near the temple there's such a mighty spring of sweet water rushing out of the earth that it becomes a narrow river; thence it divides itself into several currents and streams, and waters all the fields thereabouts, and produces thick groves of tall and shady trees, amongst which, in summer, abundance of people spend their time. . . . Here are many gardens, sweet and pleasant meadows decked with all sorts of herbs and flowers, and so glorious is the prospect that it seems to be a paradise worthy of the gods themselves. . . . Here are likewise large and fine Palms and abundance of Walnut-trees, . . . and a multitude of vines of all sorts spiring up on high, and so curiously interwoven one amongst another that they are exceedingly pleasant to the view and greatly advance the delights of the place."† The temple stood in the middle of this park, with the dwellings of the priests around it. The spot was evidently one which nature had especially marked out for man's delight; yet it must have been carefully arranged and tended to fit it for permanent habitation by the priests, and a certain measure of formality is indicated by Diodorus' mention of a great fountain which was "lined on both sides and flagged at the bottom with stone at vast expense."

New York. *M. G. Van Rensselaer.*

"In making islands we must follow nature very carefully. It is noticeable, generally speaking, how very seldom this is done; I hardly remember to have seen anywhere a made island, whose artificiality was not obvious at the first glance. This I found to be the case even in the small royal garden at Buckingham House, where the island looked more like a pudding in its sauce than like any nature ever produced."—*Pückler-Muskau*, 1834.

*"Cæsar found, in Britain, apples of indifferent quality and a very poor catalogue of other fruits, such as the Hazel, Bullace, wild Raspberry, Sloe, Elder and Blackberry. The generals who succeeded him left us, at quitting, the Pear, Peach, Cherry, Vine, Fig, Mulberry, Damson, Medlar and Walnut, with many ornamental shrubs. They were men of taste and luxury, and some of those who resided long in this country sent to Rome for any novelty suited to the climate, planted, probably, the first orchards—at least of superior fruits—the earliest Rose-gardens, and, among other trees, the Bay, the English Elm and the Plane, which had passed from Asia into Italy, and had reached the northern shores of Gaul, as Pliny states, about A.D. 79."—"The Migrations of Plants," *Edinburgh Review*, April, 1889.

†Blake's translation.

Holiday Notes in Southern France and Northern Italy.—VIII.

MENTONE must be a dreary spot to the ordinary tourist, except during the winter and spring months, when the place is crowded with visitors, attracted by its mild climate and natural beauties. Full details about the climatology of the district are to be found in Dr. Henry Bennett's charming book, "Winter and Spring on the Mediterranean," a work which has run through several editions and is pretty well known in the United States. Without studying the climate it is impossible to understand such a wonderful array of vegetable forms, such a strange mixture of tropical, sub-tropical and temperate plants growing side by side as are seen here. Nowhere in Europe have experiments on the hardiness of tropical plants been conducted on so large a scale as on the Riviera, and consequently the northern gardener finds much to learn from both the failures and successes of his brethren in the south.

On steep slopes near the station at Mentone are groups of such very fine Agaves (or Aloes, as they are called in Italy and elsewhere) that they attract the attention of every passer-by of a horticultural turn of mind. *Schinus Molle*, the Pepper tree or *Poivrier* of the French, is a favorite street tree here, as well as elsewhere along the Riviera; it is of very graceful habit, when not too much cut in, the long, slender branches—clothed with dark green, pinnate leaves, and bearing panicles of red fruits about the size of pepper corns, and about as hot to the tongue—droop much in the manner of those of our common Weeping Willow.

A short avenue, going at right angles to the Avenue du Careï, is planted with Date Palms and *Washingtonia filifera* (at the present moment probably the most popular Fan Palm along the Riviera) in alternate pairs. The bed of the Careï—at the time of our visit quite dry and dotted here and there with annual weeds of a southern and unfamiliar type—is flanked by roads, along the sides of which are planted such trees, etc., as Oleander, big Ligustrums, *Photinia serrulata*, *Senecio Petasites* and *Myoporum lætum*. In one garden a bush of *Wigandia Caracassana* some fifteen or twenty feet high, with enormous panicles of fruit, was a very conspicuous object from the footpath.

The public garden of Mentone is unworthy of the place; it is small, and the flowering shrubs are simply clipped with shears, and are neither pruned nor cultivated in any rational way.

As a weed on roadsides leading from Mentone to Grimaldi we noticed the Squirting Cucumber (*Ecballium Elaterium*), a plant which in some parts of England is cultivated for medicinal purposes. On dry, sunny banks Rosemary seemed quite happy, and here and there the Caper (*Capparis spinosa*), with its long, slender branches, hung down the face of the hot rocks. Fine groves of Olives and Lemons flank the highway, from which beautiful views of the sea and coast line are constantly appearing. Sometimes Wild Pines (*Pinus Halepensis*) and the so-called Umbrella Pine (*P. Pinea*) clothe the face of rocky, barren slopes almost down to the water, and add not a little to the beauty of the scenery. Part of the side of a hill before Grimaldi is reached is the site of the garden of Dr. Bennett, whose name has already been mentioned at the beginning of these notes. What can be done, even under very adverse circumstances, by the enthusiastic gardener is obvious here, for a considerable collection of plants has been gathered together, and is cultivated on a site where previously few even native plants could find a living. Magnificent views are obtained from Dr. Bennett's garden, particularly from the top of the Saracen tower on the height behind the house—a building in the Florentine style of the fifteenth century. Among flowering plants noticed was a fine specimen of *Brunsvigia Josephinæ*, with its red flowers arranged in an umbel more than forty inches across and surmounting a scape nearly two feet high. Amongst the South African farmers who are familiar enough with Brunsvigia in a wild state it is known as the Candelabra-flower. Several, however, to whom I had given the dimensions above mentioned had never seen in the native habitats of the plant any inflorescences nearly so fine as that I have described in the gardens of Torre di Grimaldi.

In a small piece of water on one of the terraces, high up the side of the hill, is a colony of the White Water Lilies (*Nymphæa alba*); this affords abundance of cut flowers until December, when the Cape Pond Weed (*Aponogeton distachyum*), which has been at rest during the hottest part of the year, gets into vigorous growth and continues the supply throughout the winter and spring.

LA MORTOLA.—Across the Italian frontier, about an hour's walk from Mentone by the famous Corniche road—and at about the highest point of the road between San Remo and

Monaco—brings us to La Mortola, a small village in the midst of Olive-groves. Here Palazzo Orengo, the residence of Mr. T. Hanbury, is finely situated, and is surrounded by a beautiful garden containing an extraordinary collection of plants. Just twenty-two years ago its present owner found it covered with Olive and Lemon-trees, some of which still remain; the area of the garden is about fifty acres, and there is a difference of level of considerably more than six hundred feet between the lower portion and the highest part. Some fifteen years ago a couple of illustrations, representing views in the gardens of Mr. Hanbury, appeared in the *Gardeners' Chronicle*, but these fail altogether to do justice to the exquisite beauty of the place and its surroundings; the letter-press, however, accompanying the illustrations in question, recalls vividly to my mind the impressions received at La Mortola. A few sentences covering some of the points I find recorded in my note-book. I herewith copy from the *Gardeners' Chronicle* for July 11th, 1874: "Our business lies not so much with the village as with the grounds round the Palazzo Orengo, now occupied by Mr. Thomas Hanbury. Placed in a situation very similar in character to the projecting cape on which Monaco is situate, and almost equally lovely in its surroundings, this garden is one of the most interesting, from the richness and variety of its contents, that can be seen in any country. It occupies the slope of a hill trending toward the sea, is protected in part by the mountains which rise behind it, but must be exposed to certain winds which rush from the north down a deep gorge on the western side of the garden. This gorge, from the side of which our illustration is taken, descends from the top of the mountains to the sea, and its sides are planted with Olives and Pines. This ravine adds greatly to the picturesqueness of the garden, and, together with the rocks in its vicinity, furnishes a perfect treasure-house of wild plants. Fancy the delight of gathering Wild Myrtle with one's own hand, and Wild Oleander, and yet in Europe! *Coriaria myrtifolia* is also a characteristic plant, and so is the pretty *Smilax aspera*, whose spotted leaves and zigzag clusters of pink berries are of a very ornamental character. Lavender, Rosemary and Thyme grow abundantly on the rocks. *Convolvulus althæoides* is one of their greatest ornaments. The Caper flourishes on the walls. A species of Moricandia comes up everywhere in the neighborhood as a weed, but is one of those plants whose distribution is entirely confined to a narrow area on this coast, it not being found elsewhere. A species of Asparagus (*A. acutifolius*) is by no means inelegant; *Daphne Gnidium* grows here in some profusion; the Alaternus, so familiar to us at home, fruits abundantly; Globularias abound on the rocks; Euphorbias are very characteristic, in particular a little spiny species, *E. spinosa*, and a really grand shrubby species, *E. dendroides*, which forms large bushes, not only under the Olives, but also springing from the clefts of the rock close to the sea, where little else will grow. An admirable selection from these native plants—admirable not only from the judgment with which they have been selected, but also for the faithfulness with which they have been represented, and the interest that has been thrown around them—is given in (the late) Mr. J. Traherne Moggridge's "Flora of Mentone." An account of some of the more remarkable exotic plants in Mr. Hanbury's garden will be given in my next series of notes.

Kew. *George Nicholson.*

Entomological.

A Tulip Tree Leaf Destroyer.

(*Cecidomyia liriodendri.*)

IN the *Monograph of the Diptera of North America*, Part I, (1862), p. 202, Baron R. Osten-Sacken gives the following brief account of the insect to which this notice and the accompanying illustration (see page 605) refers.

"*Cecidomyia liriodendri*, n. sp., Brown spots with yellow or greenish aureole on the leaves of the Tulip tree (*Liriodendron Tulipifera*). These spots, about two-tenths or three-tenths of an inch in diameter, indicate the presence, inside of the leaf, of a leaf-mining larva of Cecidomyia. It is about one line long, orange, the exserted portion of the breast bone is truncated heart shaped; the tip of the body has two short, horny points, directed upward. (Similar spots on the same tree are produced by a lepidopterous larva.)"

No further observation is made. Baron Osten-Sacken had evidently not seen the imago, and I have not been able to find any other record or account of the insect or its injuries. During the past two years, at least, the beauty of the foliage of many large Tulip trees about Boston has been destroyed by the work of these little leaf-miners, or, more properly, spot-makers, belonging to the large genus Cecidomyia, which includes the destructive Hessian fly. Many people who have always counted upon their Tulip-trees as belonging to one of the few species free from serious insect-attacks, have, by midsummer, been disgusted to find the leaves filled with large brown and yellow blotches. In some instances the foliage, by the end of August, has become so brown and twisted from the effects of numerous spots in every leaf that it has had the appearance of having been scorched by fire, and many of the leaves having thus become dead and dry fall to the ground.

There are several (three or more) broods of the insect during the season, and the broods so overlap each other that some larvæ may almost always be found. The first eggs are probably laid on the young leaves as they unfold in the spring, and the last lot of larvæ reach full growth about the end of September, when they make a slit on the under side at the edge of their mine, and escape to the ground to pupate and remain through the winter. The pupa skin is very thin and transparent. The species of Cecidomyia are so numerous, and so similar in most of their characters, that it is generally not easy to identify the flies without a knowledge of their early stages and habits. In the present case the body of the small, delicate fly is light brown in color and sparingly covered with hair. The length of the female is about eight-hundredths of an inch (two m. m.), and of the male considerably less. The head is black; the antennæ are dark brown and in the female apparently thirteen-jointed. The joints of the antennæ of the female are on short pedicels, and they are cylindrical and of even length. The basal joint is thicker and much shorter than the others. Each joint has a whorl of hairs around it near the base, and a few near the other end, and some of the basal hairs are longer than the joint.

The antennæ of the male are much longer and apparently twenty-four-jointed, with two additional very short and indistinct joints at the base. The pedicels between the joints are long; the joints are simple, short, and bulb-like, every alternate joint being slightly smaller; and the connecting pedicel is somewhat thicker and shorter than the next, which is slender and cylindrical. Each joint is provided with a whorl of very long hairs, thus giving the male antennæ a feathered appearance.

The legs are long, with femora and tibiæ of equal length, and tarsi much longer. They are banded by light yellow and brown, and are dark or black at the joints.

Like most of the genus, the surface and margins of the wings of this species are hairy, the hairs being longer and more numerous toward the base. The wings of the largest specimens (females) expand about two-tenths of an inch (five m. m).

The poisers appear light brown.

The dark spot in the leaf is the part occupied by the larva, and the "yellow or greenish aureole," which is represented within the light outer lines in the figure, is probably caused by the disturbance of the tissues, or more likely by the absorption of the nutritive sap by the larva. As these larvæ cannot devour the tissue, but simply live upon the sap, the diameter of the spots occupied by them is usually little greater than the length of the inmates. In addition to the brief description of the larva given by Baron Osten-Sacken, it may be noted that when removed from its mine and placed upon a flat surface it has the power of springing an inch or two into the air. This is done by doubling up the body and suddenly extending it again, and probably the large spines on the last segment are made use of for this purpose. Some other species are known to possess the same power of springing, and in the monograph referred to (p. 183) it is remarked that "all such larvæ belong to the sub-genus Diplosis." The venation of the wings corresponds with the venation given for the sub-genus Diplosis, and the number of joints of the antennæ also agree with the characters as drawn up by the late Dr. H. Lœw. But without referring to Dr. Lœw's arrangement, I should have been inclined to describe the antennæ of the male as thirteen-jointed, each joint being very deeply and widely constricted in the middle and forming two bulb-like divisions.

No thorough, cheap, and easily applied remedy can be given for this pest, because the larva, living between the epidermal layers of the leaf, is safe from the action of poisons. Showering the trees with a very fine spray of kerosene emulsion or whale-oil soap when the flies are active or ovipositing might destroy many of them; but, where the trees are large, this would be difficult and expensive, and would have to be repeated, and the result then could only be a partial success. As the larvæ fall to the ground and probably pupate directly beneath the trees on which they live, they might be best and

most easily destroyed by thoroughly turning over and rolling the soil in the late autumn or very early spring. Thus buried deeply and with the earth pressed firmly about them, the delicate flies would either be crushed in the pupa state or would not be able to push their way to the surface. This might destroy a large proportion of them. These remedies are merely suggested; they have not been tried, and may not be practicable or efficient. Very injurious attacks are often quite local, and on some estates about Boston the trees have been comparatively free from damage by the insect, although its presence may be everywhere detected.

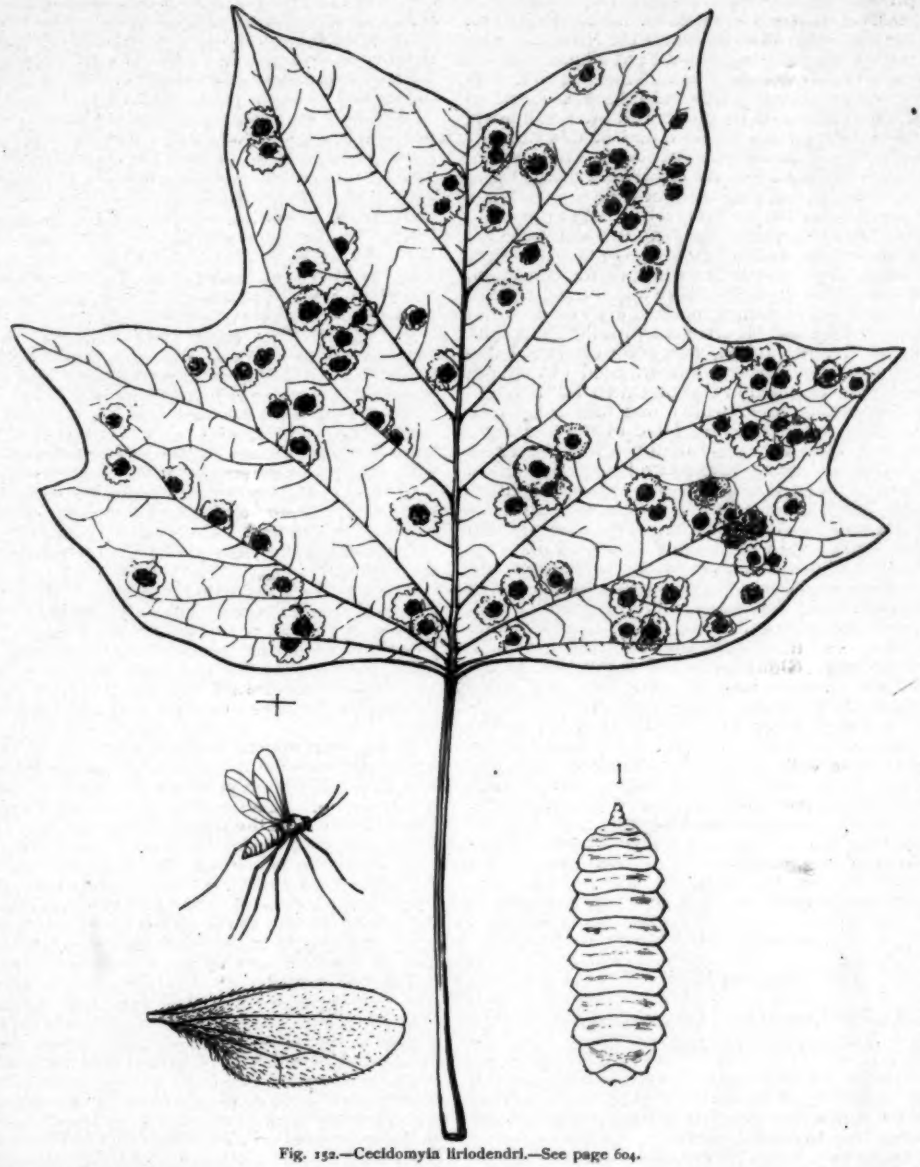

Fig. 152.—Cecidomyia liriodendri.—See page 604.

It is quite possible that on account of unfavorable seasons or other causes, there may be years when its disfigurement of the foliage will not be noticed, and it will only occur in injurious numbers at irregular intervals.

The accompanying illustration, from a drawing by Mr. C. E. Faxon, shows a leaf well filled with spots, although there are frequently two or three times as many in a single leaf. It may be added that the "similar spots" made by a "lepidopterous larva," mentioned by Baron Osten-Sacken, have so far not been detected here; but leaves with long, irregular, winding mines are not uncommon.

Arnold Arboretum. *John G. Jack.*

Foreign Correspondence.

London Letter.

THE end of November may be termed a kind of close season for horticulture. There are Chrysanthemums, of course, and they are everywhere, crowding exhibitions, filling the papers, and occupying the attention of almost every horticulturist. In the houses we have little except Chrysanthemums. Hope of better things soon is encouraged, however, by the development of the Poinsettia, Euphorbia, Linum, Luculia, winter-flowering Acanthads and the Ericas; but they are only coming. Out-of-doors the near approach of Christmas is heralded by the beautiful white cups of the Hellebores, and there are still left the spikes of Schizostyles, notwithstanding three successive nights of about nine degrees of frost and a slight fall of snow. The Sea-buckthorn (*Hippophae rhamnoides*) is heavily laden with its bright orange berries, and the yellow Jasmine is beautifully in flower on a sunny wall. Until the frost came our trees and shrubs were richer in autumn colors than they have been for many years. All of those mentioned by Mr. Jack in his interesting notes on the autumn colors of leaves in American gardens were brilliant here, besides many others not mentioned by him. Indeed, so

favorable to the development of autumn tints has the past season been that scarcely a tree or shrub out-of-doors was lacking in attractiveness of this kind. Here we require a mild, moist, sunny autumn to make the leaves of deciduous trees and shrubs assume beautiful colors before falling. If we could be ensured of this, then English landscapes might be made as glorious as the best in America by the use of those trees which in a favorable season put on these glowing colors. But next year and the next may be as unfavorable as this has been favorable. Some plants never fail even here, as, for instance, some of the Maples, the Oaks and Ampelopsis; but it is only rarely that we get such pictures as hardy vegetation generally presented this year.

Gymnogrammas.—The illustration of *G. schizophylla*, var. *gloriosa*, published in Garden and Forest for November 6th (p. 533), is a beautiful representation of a Fern which must be extremely difficult to represent on paper. The species is popular with Fern-growers in England, as indeed are a considerable number of the hundred or so species at present known. Forty of them are represented at Kew, and of this number about two-thirds are sufficiently ornamental to rank among the choicest of garden Ferns. *G. schizophylla* was known in Jamaica a long time before it was successfully introduced into England, although many attempts were made to get it to Kew. The plant is so very delicate that it soon perished when subjected to the adverse conditions of a long sea voyage in a Wardian case. It came at last in surprising condition, luck having favored it all the way, and we had the pleasure of opening the Wardian case, which contained about a score of beautiful plants in fair health. It arrived about the same time at the nurseries of Messrs. Veitch, who soon afterward distributed it. The variety gloriosa was distributed in 1885. It is not of garden origin, as stated in Garden and Forest, but is an exceptionally strong form which was imported from Jamaica. The species is somewhat variable in the size, form and substance of the fronds, some of the forms being as weak and attenuated as that named gloriosa is strong and full. The cultivation of Gymnogrammas is not difficult, if their liking for direct sunlight is remembered. I know from experience that a position which is shaded is much less agreeable to these plants than one which is not shaded at all. The Kew collection is placed on a side stage with a south exposure, and when all the rest of the house is shaded with the blind this is left unshaded. The difference in the vigor and health of the plants thus treated and those grown in a shaded house is most marked. Of course the atmosphere is kept saturated and the plants are freely watered at the root, except in winter, when the soil is kept moist only.

Amongst the rarer species, which are sufficiently ornamental to rank with the most select garden Ferns, the following are noteworthy, viz.: *G. Mulleri*, fronds erect, pinnate, about a foot long on well grown plants; pinnæ roundish or oblong, an inch long, rather leathery in texture, and covered on both sides with silvery scales. It is a native of Australia. *G. vestita*, something like the last, but with more flaccid fronds and stalked pinnæ. It is a native of the Himalayas, and thrives in an ordinary green-house. *G. rufa* is another of the same section as the two already named. It is distinct, covered with soft, silky hairs rather than scales; the fronds, too, are longer and more herbaceous. *G. Pearcei*, var. *robusta*, is an exceptionally strong and attractive variety which we owe to the Messrs. Veitch, who distributed it last year. The type, also introduced by Messrs. Veitch in 1864, is an elegant Fern, but too delicate to find much favor; whereas this new form of it develops into a strong, well furnished plant under ordinary treatment. All the forms of *G. calomelanos*, including several new ones, are first-class decorative Ferns. *G. trifoliata* may be called a climbing species, the fronds sometimes attaining a length of five feet by six inches in width, and requiring to be supported. Except as a very extraordinary species of Gymnogramma, it has little to recommend it.

Ferns do not receive as much attention in England now as they did a few years ago. It is only rarely that anything like a collection of them is formed, a few of the most useful for decorative purposes being grown in great numbers. The example set by Kew about seventy years ago, when the then curator, Mr. John Smith, commenced to form a collection by means of spores taken from specimens of Ferns sent to Kew by collectors, was followed in all large gardens in England, and Fern-collections were almost as fashionable as Orchid-collections are now. Although not in fashion, yet the whole order is one of the most delightful among garden plants, and few occupations could be more fascinating than the cultivation of a good collection of Ferns, beginning with spore-sowing and ending at big specimens.

Orchids.—At this time of year the Orchid-houses are much gayer with flowers than the rest of the in-door department. Already *Odontoglossum crispum* is well in flower. A very fine variety, not yet named, is in bloom at St. Alban's, in Mr. Sander's nursery. It is remarkable for the size of its flowers and for a large chestnut colored blotch on each of the segments. Another new Odontoglossum, probably a natural hybrid, and of which *O. luteopurpureum* may be one of the parents, is also in flower with Mr. Sander. Its most striking character is in the labellum, which is rather long and narrow, crisped, white, with blotches of rosy violet, and the raised lines in the throat terminating in a thin filament. *Vanda Amesiana* is flowering freely in the nursery of Messrs. Low & Co., of Clapton. The principal fact now to be recorded in connection with this fine Vanda, noted by me last year, is that it appears to thrive better in a cool house than in a tropical one. Such, at all events, is the result of experiments made in the Clapton Nursery, where there are some thousands of it in cultivation. Its near ally, *V. Kimballiana*, is also coming into flower. A plant at Kew has a spike two feet high, but the fogs have proved fatal to most of the buds. It is remarkable that fog proves to be more injurious to Vandas, Saccolabiums and Angræcums than to other Orchids. *Lælia autumnalis* is in flower, as also is *Cattleya Bowringiana* and *C. bulbosa*. Several species of Platyclinis (Dendrochilum) are flowering in the cool house. It appears from a note which accompanied the picture of *P. filiforme*, recently published in Garden and Forest, that these plants are successfully grown in a tropical house, such as suits Phalænopsis. But here they are grown in a cool house along with the cooler Cattleyas, and they are in perfect health. Some Orchids thrive in a wide range of temperature, and, apparently, Platyclinis should be numbered amongst them.

Masdevallias.—The publication of Messrs. Veitch's beautifully executed monograph of Garden Masdevallias occurs at a time when it is likely to do some good by rousing Orchid-fanciers to the merits of many of the species as ornamental flowering-plants, and to the interesting nature of the genus as a whole. For it has to be admitted that in England at all events the Masdevallias have fallen out of favor, or, adopting the expression in the Orchid market with regard to them, there is nothing like the money in the majority of the species that there was a short time ago. This is a sordid view; but when one observes a glut in the market of established healthy plants, it is a safe conclusion that they are not much in demand. Next year may bring a revival of the love for Masdevallias. Certainly there is no genus in the whole Orchid-family which is so peculiarly suited to the ordinary cultivator, as well as to the specialist, as this; and for the following reasons: they are, as a rule, easily procured; they may be kept in health much more easily than most Orchids; they flower freely, many of them being rarely out of flower, and their flowers are extremely varied in size, in color and in form. If fantastic flowers are wanted they are abundant among Masdevallias, while richly colored, elegantly formed or "microscopically beautiful" flowers are equally well represented. Possibly the fact that these plants are not difficult to keep in gardens accounts for their depreciation in value here. But in your country I suspect they are not so abundant, nor so cheap, and to any one in search of an interesting and delightful specialty, the Masdevallias may be recommended. "Calypso" has called attention to the botanical and artistic merits of Messrs. Veitch's manual; permit me to add that the cultural directions are equally excellent, and that for any one wishing for directions as to what is best worth growing and how best to grow it, this book contains everything that is necessary.

Ficus elastica variegata is a handsome stove plant which was introduced into English gardens about five years ago and is now popular. It is simply the well known "India rubber plant" with the outer half of the leaves colored clear shining cream-yellow—not a smudge-like variegation, nor yet a sickly pallor such as one sees in many new variegated plants, but a healthy, attractive yellow. Plants at Kew three feet high have leaves down to the pot and every leaf has the variegation well developed. It is much admired and will certainly become a general favorite. The plant was not received at first with much favor, and this was owing to there being two forms of it, one much inferior to the other. It is just as easy to multiply and cultivate as the green form. Possibly, however, the variegation would not be so marked if the plant were grown in a green-house; I am only able to speak of it from its behavior when treated as a stove-plant.

Lilium auratum.—The number of bulbs of this Lilium which are imported, sold and killed in the gardens of this country is incredible. Weekly sales, commencing long before Christmas and ending about March, are conducted in London,

and every week from ten to twenty thousand bulbs are disposed of in this way alone. In addition there are the thousands of bulbs which the nurserymen import direct from Japan and distribute. Apparently the Japanese are as successful in the multiplication of this Lily as the Dutch are in that of Hyacinths and Tulips, otherwise the annual supply would not increase as it has done. The treatment to which the large majority of the bulbs of *L. auratum* are subjected in England must be very wide of what is right, for when properly treated no Lily is more easy to cultivate nor increases in the ground more rapidly. It should be planted six inches deep in beds in which Rhododendrons, Azaleas, Kalmias, or other peat-loving plants are grown, protected from severe frosts by a cone of ashes or cocoa-nut fibre about six inches high, and otherwise let alone. Treated thus at Kew a single bulb has in three years multiplied so as to produce eleven stems with an aggregate of one hundred and twenty blooms.

London. *W. Watson.*

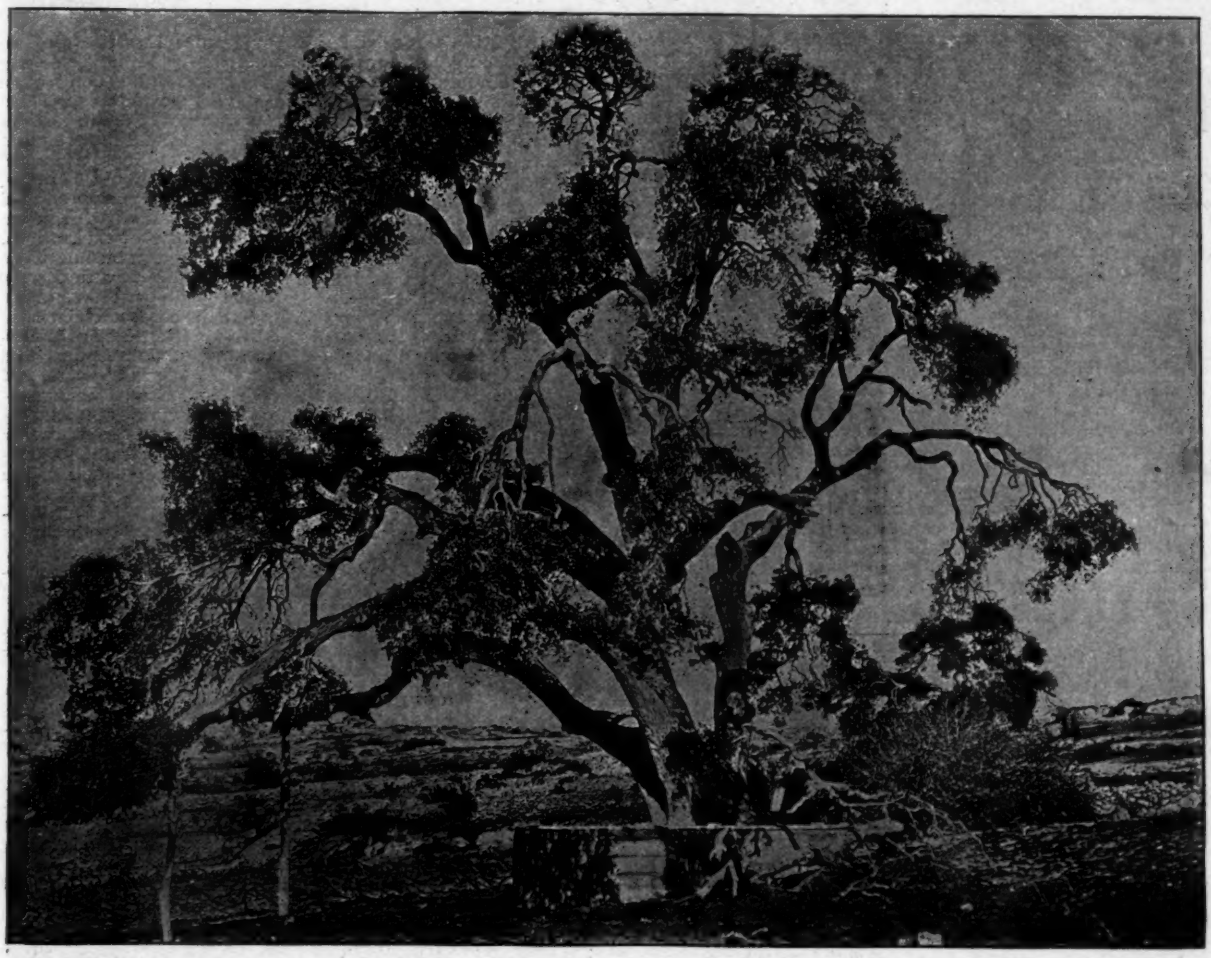

Fig. 153.—Abraham's Oak.—See page 602.

Cultural Department.

Christmas Roses.

BESIDES the annual importations from the native countries of *Helleborus niger* and its varieties, much is being done in a quiet way at home in raising seedlings from the best of the old established forms, and many of these are already showing characteristics which give the raisers every encouragement to redouble their energies in this good work of improvement. Although it is quite true that from these native habitats, chiefly Italy, the Tyrol and other parts of Austria, we occasionally get a really handsome form, it becomes a very doubtful question if the expenses of collecting, freight and other dues can be realized in the face of the many good forms raised at home. If one was always sure of procuring, in quantity, some form not already in cultivation, all would be well; but instead of this, one receives amongst a mass of almost worthless varieties only a few with distinct characters, and a whole year, perhaps two, will be lost before they can all be determined. If seeds from selected varieties be sown at the same time, many of them will bloom the second year, and the raiser will be able to make his selection not later than the third year after sowing if the seedlings have been well treated. This means of procuring new forms is certainly the best, especially when we take into account the fact that one, at least, of the old varieties is well known to grow and flower freely on heavy, clayey soil where the other varieties totally refuse to grow at all. By means of seedlings the number of varieties for heavy soils may be increased and the characters made more pronounced. We are not at all sure that the best treatment for the Christmas Rose, whether in heavy or light soils, is fully understood, for a really fine plant can rarely be found in any of our nurseries, but this in a measure may be owing to the practice of breaking up the clumps for propagation. The prevalent idea seems to be that the Christmas Rose loves an unmanured soil, whereas our experience points rather to the most liberal treatment. Their first requirement is a deep, rich, well drained, but moist, soil. Then they need liberal top-dressing early in autumn, with stable manure, leaf soil and soot, if procurable; this given early in autumn feeds the plants at a time when they most need it—when the buds are being formed. The dressing may be lightly forked in late in spring. The last requirement is complete shelter from cold, drying winds. The same treatment for this handsome group of winter flowers will, no doubt, be applicable in the United States.

These Hellebores are sure to attain a high perfection in the United States. This is especially true of *H. niger altifolius*, which does exceedingly well in Scotland, where it perhaps attains its greatest perfection in the United Kingdom. Hellebores also do

well in Ireland, especially the pure white, *H. niger angustifolius* and the St. Brigid form, both of which are largely grown there. To-day, November 16th, we gathered the beautiful *H. niger maximus* or *altifolius*, the first to remind us of the approach of Christmas, and lasting in full beauty until the snowy white forms above named greet us early in the new year. *H. niger altifolius* is always the first with us here, beginning toward the latter end of October and continuing until January. Excepting, perhaps, the Riverston variety, which is a truly handsome flower, *H. niger altifolius* is the tallest and largest flowered of all known varieties. When grown under shelter the flowers come almost pure white, but when in the open air they have a warm, rosy tint, very attractive when grouped. The leaves grow from twelve to twenty inches high, of a fine dark green, and when liberally treated remain in perfection all through the flowering season. This is probably the only form amongst the old ones that flourishes in a cold, clayey soil, which is found fatal to most others; and it will prove a boon to those living in low-lying or cold districts. *H. niger angustifolius* comes next in order, and of this variety there are at least three distinct forms: The Wardie Lodge form, which is an exceedingly valuable one; St. Brigid, which is also a free, handsome kind, and the Riverston form, which is one of the best kinds we possess. The Brockhurst form, which we take as being nearly the type, is not the least valuable of the four, and is an exceedingly free and easily grown plant. The leaves are bright green, the segments very narrow, and the flowers, which are pure white, form a pretty, snowy nest in the centre of the plant. These plants are not so liable to damage, owing to the protection afforded by the foliage, both at the sides and above them, as when full open they are still well below the leaves. Of the variety Major there are also several forms, the Irish one being, perhaps, finer than the Bath one, but both are certainly exceptional; indeed it is from this class we get some of our best Christmas Roses. The very large, snowy white flowers are produced with almost certainty about Christmas-time. There is also a fine Continental form, probably selected from Austrian plants, called Madame Fourcade. The flowers are cup-shaped, snowy white; the leaf-stalks bronzy, with a tinge of the same running through the pale green leaves. It has a neat though spreading habit and is an excellent plant for pots. An almost intermediate form called Caucasicus is one of the most useful for rockeries; the flowers out-of-doors being slightly tinged with rose, but when grown under glass, snow white, of beautiful form. It has a most vigorous constitution and stands severe weather well, the flowers being protected like those of Angustifolius and its forms. Most of these varieties and forms stand slight forcing very well, but if too hard driven they will certainly take a rest the following season.

Kew. *D. Dewar.*

Helleborus niger and its varieties are just now supplying many beautiful flowers in the open ground, which would otherwise be destitute of anything in the way of flowers, owing to the several severe frosts that have been experienced recently. Frost seems to have no injurious influence on these beautiful flowers, whose popular name, Christmas Roses, is, in this instance, a happy one, for with us they often last until the festive season has come and gone. The cultural needs of these plants are so few, and, in most cases, easily supplied, that no one with a garden need be without flowers even at this dull season; but these wants, though few, are imperative.

The first of them is a soil of a naturally retentive nature, so that they may at no time suffer from lack of moisture at the roots, especially during their season of growth, when this is most likely to occur. Another essential to their successful culture is shade from the scorching rays of a midsummer sun. To obviate this we plant them under deciduous trees, where they get the benefit of the shade in summer, while the fallen leaves of autumn provide an acceptable protection to the crowns of the plants in winter. Hellebores like a rich soil, and, as their thick, fleshy roots penetrate deeply, plenty of manure should be added when planting them, for, when once planted, they should not be disturbed again until the soil has become impoverished; this is best done in spring as soon as the frost disappears, as these plants commence leaf-growth very early, and if shifted after this has fairly commenced it seriously affects the development of the large, shining foliage, itself an ornament at all times. *H. niger* is best known, but cannot be compared with the varieties of it now in commerce. Of these, we find the one called *H. niger altifolius* to be the best; its flowers are three inches across, pure white inside and pink on the outside of the sepals, and borne two and sometimes three on stems twelve inches in length. *H. niger major* and *H. niger maximus*, with us, are identical, and rank next in beauty, while *H. niger angustifolius* is another desirable form, with leaves the segments of which are narrower than the type, and the plant produces more flowers, and these are almost pure white. The beauty of the blossoms is often marred by heavy rain-storms bespattering them with soil. This can easily be avoided by placing a sash or handlight over the plants while in bloom, or they may be carefully lifted, potted and placed in a cool house or frame and planted out again in spring. So far we have noticed only *H. niger* and its varieties; the cultural remarks apply equally well to the whole genus, and there are many other species, but they all flower in spring, the flowers being produced with the young leaves. *H. orientalis*, *H. Caucasicus*, *H. Abchasicus* and others belong to this section, and are the parents of the many fine named hybrids now offered in trade-lists.

Passaic, N. J. *O.*

Leading American Apples.

THOUGH we received the Apple from Europe (the improvement of our native American Apples never having been attempted), yet it must be noted that on this continent a large number of the best varieties have appeared as seedlings from the original stock. American apples take the lead in every market where they have appeared; and they stand at the head of the list, with very few local exceptions, wherever this fruit is sold. Each section of the Union (except, perhaps, the Pacific Coast and Rocky Mountain regions) has produced its own varieties, having merits and adaptation which give them more or less preference near the place of their origin. To the older sections, where fruit-growing, as a business, has been longest pursued, belong the best known varieties for the general market; yet the south and south-west have many Apples of all seasons, native to the soil, the commercial merits of which have only to be made known in order to be acknowledged. It is only among the summer and fall Apples that any foreign sorts find acceptance with our fruit-growers, and the list of these hardly extends beyond five named varieties—Yellow Transparent, Red Astrachan, Oldenburgh, Alexander and Gravenstein. The Astrachan is a most remarkable fruit, in the fact that it is equally at home, valued and productive in Canada and Louisiana, and from the Atlantic to the Pacific.

In the north-eastern and middle Atlantic states the four leading native early market Apples of American origin are Sweet Bough, Early Harvest, Williams' Favorite and Summer Pippin. Some persons would replace the Williams' Favorite with American Summer Pearmain, which is popular also southward along the Atlantic Slope, with the Early Harvest, the Summer Queen and Summer Rose. Farther south, Cardlina Red June comes into this list. For home use, Primate and Early Joe must be added; while, south and westward, Early Red Margaret is popular. It is not certain, however, that this is an American variety.

The fall Apples are extremely numerous; and, as the latitude varies, many sorts among them will rank as summer fruit. In the north and east, Fall Pippin, Porter, Munson Sweet and Maiden's Blush are most commonly seen. Westward, and in Canada, St. Lawrence is added; while, as we go south we note in addition, Buckingham, Fallawater and Rambo. In the north-west Fall Wine, Haas and Saxton appear.

The early winter Apples of the north-east are very numerous. Fameuse (in southern New England a late fall Apple), Jewett's Red, Bellflower and Hubbardston are abundant. Southward the Baldwin falls into this list, with the Striped Winter Pearmain, Smokehouse and Smith's Cider. In the north-west the Wealthy is now becoming the leading early winter Apple. Northern Spy is not a long keeper in the Ohio Valley. Wagener is popular in the milder parts of the north-west.

Late winter Apples in the north-east include Baldwin, Rhode Island Greening, Northern Spy and Roxbury Russet among the most prominent and profitable; but there is a long list of others well known and salable, especially in the smaller local markets. The King of Tompkins must be included for New York, while westward Limber Twig and Golden Russet, of western New York, are very prominent, though Ben Davis leads all of this class in the Mississippi Valley from Iowa and Illinois southward. Of winter sweet Apples, Talman easily leads in market value. In the south and south-west, aside from Ben Davis, Pryor's Red, McAfee and Nickajack are probably the most widely known.

Newport, Vt. *T. H. Hoskins,*

Orchid Notes.

Cypripedium Spicerianum.—This lovely species may be looked upon as a harbinger of autumn, for as the months of October and November approach the flowers of *Cypripedium Spicerianum* appear, and last until the beginning of the New Year. Native of India and Assam, it was first introduced to cultivation in 1878 by Mr. Herbert Spicer, of the Woodlands, Godalming, England, among a mixed collection of Orchids. Since that time it has gradually gained on the popular favor, and is now to be found in almost every collection, so much admired are its flowers, which present a unique appearance. The upper sepal is very large and slightly arching forward, of the purest waxy white, with a broad, deep crimson-purple band running from apex to base, the latter portion being stained with green and covered with minute reddish spots. The lower sepal is much smaller and greenish white, being ovate-acute in shape. The ligulate petals, which are bent a little forward and slightly depressed, have crinkled margins and a yellowish green surface, thickly covered with small, dull red spots on each side of the crimson mid-line, while the helmet-shaped lip is purple brown, often suffused with crimson. The staminode is very conspicuous in this species; its margins are wavy and pure white, inside of which the remaining surface is crimson-purple. The leaves are oblong, six to twelve inches long, dark green above and spotted with dull purple underneath, toward the base; from their centre springs the slender, dark purplish hairy scapes, each of which bear, as a rule, only a solitary flower, although instances have been recorded where two flowers were borne on a scape.

C. Leeanum is now also in flower. It is a most popular hybrid, being the result of crossing *C. insigne* and *C. Spicerianum*, between which it is intermediate, although the characteristics of the latter species are more predominating. The upper sepal is very large, pure white, with a bright grass-green blotch at the base, which is traversed by lines of dark purple-brown, while on the white portion are a few mauve-purple spotted lines, on each side of the broader median line which runs to the apex. The lower sepal is pale green, and the petals, which resemble those of *C. Spicerianum*, have an undulated upper margin and a yellowish green surface, with a dull purple mid-line running from base to tip and traversed by spotted veins of purple-brown. The lip is pale green behind, and glossy purple-brown, of a more or less intense hue, in front, while the staminode partakes of the shape of that of *C. Spicerianum*, but is devoid of its rich color, except for a very dull tinge of mauve, which encircles the green and yellow tooth so conspicuous in *C. insigne*. The variety known as Superbum is recognized by its larger upper sepal having brighter purple spots.

C. Leeanum was raised in the collection of Sir Trevor Lawrence, Burford Lodge, Dorking, and the variety Superbum in Messrs. Veitches' establishment, about the year 1885.

Both of these Lady's Slippers grow freely, and may be treated in the same way. *C. Spicerianum* has been found in its native habitat growing on steep and perpendicular rocks in rich loam and in moist places. The former fact is well authenticated, for when imported plants arrive they are often smeared with mud. Under culture they may be grown in a compost of loam and peat, and as the roots grow quickly and vigorously, pots large enough to enable them to develop should be chosen, and these should be well drained for about two-thirds of their depth with clean crocks. The plants may also be grown with equal success in fibrous peat and sphagnum. A warm, moist atmosphere is best, and care should be taken never to let the roots become dry; but the amount of water to be given must be regulated according to the growth of the plants and the time of year, and during the hot summer days it will also be found best to shade them.

St. Albans, England. *John Weathers.*

Cattleya Percivaliana.—Large quantities of this beautiful Orchid are now in full beauty with us. The many hundred flowers, as well as an immense number of *Lælia anceps*, now also in full bloom, will furnish a perfect blaze of bloom until the coming of larger flowers of *C. Trianæ*. *C. Percivaliana*, though possessing the smallest flowers of the Labiata group, is a very valuable species, both for cutting and decorative purposes, as its season of flower is fully a month earlier than the winter kinds and it fills the gap between these and the autumn blooming kinds. In addition to this, it proves to be one of the easiest of this extensive genus to cultivate and flower. It was introduced about six years ago from the Cordillera of Venezuela, at an elevation of about 4,000 feet, where it is said to grow on rocks in very wet places and where there is a full exposure to the sun. That this does not apply to all is shown by the great disparity in the size and shape of the imported bulbs and leaves. Some of these are of immense size, the bulbs ten inches in length and proportionately thick, and would easily pass for *C. gigas*. In the other extreme the bulbs are only three inches long and almost globular in the centre, denoting a slow, cool growth without much water or with considerable exposure. Between these two extremes almost any variety of growth may be seen. The coloring of the growths also varies from a deep green to a reddish brown. Almost as much variety may be seen in the coloring and size of the flowers. In the type these are four to five inches across, with deep rose sepals and petals. The lip is convolute and of the same color externally. The front lobe is of a deep crimson purple, with a pale lilac-frilled margin, the throat being of a rich, tawny yellow. Some of the larger varieties measure seven to eight inches across, and cannot be distinguished from the old *C. Mossiæ*, of which this may only be a geographical form. As with almost every Orchid there is an albino form, which is called Alba, but this is at present very rare. One great drawback to *C. Percivaliana* is a somewhat disagreeable odor, similar to that of *Lælia autumnalis*, but, happily, this defect is not constant in the species, but is noticed more especially in the small flowered type. To grow this species successfully, it should be given plenty of heat and water during growth. Use fibrous peat and moss, well drained pots, and let these be as small as possible. As soon as the flowers are over the plants should be rested by withholding water, except sufficient to keep the bulbs plump.

Kenwood, N. Y. *F. Goldring.*

Heating Green-houses.

THIS is a subject to which much study and experiment has been devoted, and yet reliable data for general practice are very hard to find, and this is mainly because in each instance special conditions of latitude, exposure and so on must be taken into account. Attention, however, is not now invited to any particular method of heating, but a few suggestions are proposed which refer to the heating of houses in a general way. In the case of brick-set boilers, an examination should be made at proper intervals to ascertain the condition of the flues, that they may be kept thoroughly clean and free from cracks, as a small accident may do much damage by permitting the escape of gases injurious to plant life. With all such boilers any portions of the flue that are near the fire or exposed to strong heat should be thoroughly lined with good fire-brick, a precaution sometimes omitted through a mistaken idea of economy. Another point in the construction of smoke flues is to have soot doors and dampers as well, conveniently arranged. Fuel can always be economized by the convenient arrangement of the regulating apparatus. In plant-houses one of the most important points to be observed is regularity in temperature; the careless method of permitting a high temperature one night and a low one the next is too often responsible for the sickly appearance of plants which may have been properly treated in other respects. In extremely cold weather it is better to allow the temperature of a plant-house to fall a few degrees below the usual standard. This will be less enervating than a forcing temperature, with its rapid evaporation. For instance, a Palm-house that is usually kept between sixty and sixty-five degrees at night, may be allowed to fall to fifty-six or fifty-eight degrees without any appreciable injury, and a Rose-house that is generally run at a night temperature of fifty-six degrees, may drop to fifty degrees in very severe weather without materially affecting the Roses. During sharp weather, when hard firing is necessary, it will be beneficial to damp down warm houses by sprinkling the walks, and the surface under the benches, especially in the morning and evening; but this operation is not so often required in houses in which there are vapor pans of some description placed on the pipes.

In regard to fuel, the location of the green-house has much to do with it, though it is probably hard to find a better material for this purpose than good anthracite coal. In some localities coke is used profitably, but, naturally, does not last so long, without attention, as a good solid fire of coal, though the coke produces a very strong heat for a short time. As to the proper size of coal, much depends on the style of boiler. A stronger draught and a shallower grate is necessary to burn small sized coal to advantage, and, though cheaper, it requires more attention in using. For a lasting fire, in a majority of boilers, coal of egg-size, or the next larger size, known as "broken," usually gives entire satisfaction. *W. H. Taplin.*

Holmesburg, Pa.

Propagating.—More or less work of this character is to be done during the winter months, and therefore it is well to make preparation for it by laying in such supplies as may be needed. Attention given to such details now will save much labor and inconvenience later in the season. For instance, a good supply of clean, sharp sand should be put under cover, so that the weather may not interfere with future operations. Some Cocoa-fibre, or sphagnum, should be secured, in which to plunge cutting-pots. The Cocoa-fibre is preferable, because more lasting. Potsherds or cinders for drainage should also be provided, and if cinders are used they should be sifted out as clean as possible. A little charcoal will also be found useful, particularly where the cuttings require a considerable time in the cutting-pots or pans, for the soil in such cases often becomes sour.

Among these slow-rooting plants may be classed the Terminalias, *Theophrasa imperialis*, some of the Aralias, and *Rondeletia gratissima*, all of which and many more take a long time to develop roots.

The cut flower supply of the next season must also be provided for, and, with this in view, the first crop of Rose-cuttings may soon be put in. To secure satisfactory plants, the cuttings should be taken from healthy shoots of medium size, such as rather weak blooming shoots, these being usually of firm wood which will root quickly. Between blind wood and flowering shoots for Rose cuttings I have found no material difference, although the question is still discussed. I saw, this autumn, two houses of American Beauty, the plants in one having been raised from cuttings of flowering shoots, while a second house of the same size and under exactly the same treatment was planted with Roses raised strictly from blind wood. When I saw them I was unable to discern any appreciable difference, either in strength of growth or floriferousness of the plants in the two houses, both being in first-class condition.

Carnation-cuttings should soon be put in, for early-struck cuttings usually make the best plants. A good method with these plants is to prick them off from the cutting-bench into flats filled with soil, in which they may remain until the time for planting out. The advantage of this plan is that the plants so treated seldom become starved and root-bound, and they may be readily separated with a trowel, so that each plant, when planted out in the spring, has a good ball of earth attached to it. Bouvardias should also be put in about the beginning of the year, as the root-cuttings generally used take several weeks to make growth enough to fit them for potting off.

Holmesburg, Pa. *W. H. Taplin.*

Chrysanthemums for Stock.—I find from experience that it is quite as important to give close attention to stock-plants after blooming as before. Last year I took care to have my plants in as cool a place as I could give them, free from frost. I kept them in the Violet-house. They were kept free from insects, and watered moderately. Not one of my own stock failed me, but many of the new varieties, or others obtained outside, did poorly. Another experience was that a foul cutting produced the only infested plant I had. Late struck cuttings did as well as early ones. Next season, therefore, I shall not take cuttings until the end of February. Cuttings will strike if the temperature of the propagating bed is not above fifty degrees. The bed is better kept moderately dry so long as the cuttings do not wilt. *T. D. H.*

Wellesley, Mass.

Carnations.—Now that Chrysanthemums are nearly over, there is nothing more interesting to the amateur than a collection of Carnations, and if in a light and airy, cool greenhouse, they do equally well in pots or planted out. If allowed to become waterlogged or are subjected to too much heat they are injuriously affected. A temperature of fifty-five degrees is about right during the night-time. Occasional waterings with liquid manure and tobacco fumigation against the green fly seem to be all the special attention they demand. There has been a steady improvement in American seedlings, so that we not only have varieties of many hues and large, finely scented flowers, but the flowers are borne on long stems, and the calyx does not split and give the ragged look which was so often seen among the sorts grown a few years ago. There are now so many good kinds that it is hardly worth while to make a list of them. First rate kinds can be selected from the catalogues of any of the leading florists.

Pearl River, N. Y. *John Thorpe.*

Kalanchoe carnea is a new introduction from South Africa. It was received in England in 1886, and seeds have been offered for the first time this season by Messrs. Veitch & Co. Plants are now in bloom here from early sown seeds, and prove to be very attractive. The plants are fleshy, nearly resembling the scarlet Kalosanthes in size and form of flowers and character of inflorescence. The flowers are four-petaled, delicate pink, shading to deeper pink on the margins, and appear in corymbose cymes. They are slightly fragrant, with a honey-like odor. The leaves are light brownish green, fleshy and smooth. The plant flowers from the termination of the main stem, also from the axils of the leaves. It is now pushing new growths from the base, and, no doubt, it will continue in bloom for a long season. As this is an attractive dwarf-growing succulent of the easiest possible culture, rapidly propagated by seeds or cuttings, and giving handsome bloom in early winter, it seems a desirable addition to the green-house and probably will prove a good window plant. Aside from needing little pot-room and requiring a mixture of sandy loam and brick rubbish or similar material, it seems to require no special treatment or extra care.

Elizabeth, N. J. *J. N. Gerard.*

Correspondence.

December in California.

To the Editor of Garden and Forest:

Sir.—Owing to the heavy rains in October, and the warm weather, with showers, ever since, the gardens and orchards show some interesting freaks. The double *Spiræa prunifolia* usually sheds its leaves, in this locality, about November 1st, and blooms, on the bare branches, in spring. It is in full bloom now, December 1st, while the beautiful leaves, red and yellow, are all on the branches, and show no tendency to fall! A neighbor has Lilacs in bloom now—not large clusters, but small bunches of flowers. They never bloom from any other buds. The crimson Japanese Quince hedge shows a great many blooms at present, fully two months before the usual season. The beautiful *Magnolia stellata*, which is a great favorite here, is blooming freely in the midst of its leaves, a thing which I never saw before in fifteen years of watching its fragrant blush pink flowers. They do not usually show until New Year's or later, and then on leafless stems.

The Persian Walnut-trees, the "Kaghazi," imported from Cashmere, still retain all their leaves as if it were August. The English Walnuts have lost their leaves. The foliage of the Cherry-trees in the orchard is, for the most part, as green as it was three months ago. The *Paulownia imperialis*, forty feet high, shows, as yet, no sign of dropping a leaf. The Italian Chestnuts have lost only a few leaves from the upper branches, but many are still green and closely adherent. The general aspect of over 100 acres of orchard and ornamental grounds is that of late summer, except for the leafless Apple, Pear and Peach-trees.

Judge Blackwood, of Haywards, eight miles from here, told me to-day that he had an Apple-tree in full bloom, and that his Cherry-trees would be in blossom in a week. Professor E. W. Hilgard, of the State University, told me that several Apple and Pear-trees are in bloom in the grounds there. Some Apricot and Almond-flowers are reported from other districts. Here, at Niles, the Cherry-buds appear almost ready to come out, but other fruit trees are more backward than in the cases mentioned. The opinion among fruit-growers is that all the orchards will be in bloom two months earlier than usual.

The brilliant orange Eschscholtzias are in full bloom in a field near by—hundreds of them. February is their usual season here. The California wild Mustard is also in bloom by the roadsides. The grass on the hills and in the pastures is as tall and thick as it is in ordinary seasons by the end of March.

Niles, Cal. *Charles H. Shinn.*

Trees and Telegraph Wires.

To the Editor of Garden and Forest:

Sir.—In passing along one of our streets the other day I was shocked to find that a row of fine shade trees had been used for telegraph or telephone attachments, and that the linemen had ascended them as they do the poles, by means of sharp spikes in the heels of their boots, mutilating the bark, of course, and inviting attack from the rot fungus. Two well known citizens who were passing said in reply to some questions that nobody seemed to have any power to stop such outrages.

Are we, then, wholly at the mercy of any corporation who cares to peril our lives, or destroy our shade trees, or drive us crazy by wires vibrating against the tin roofs of our houses? I am growing callous to many things, but for the trees there is "a corner of my heart that is sorry still." What we are going to do I do not know, but I send this growl where I think it may meet with sympathy.

Brown University, Providence. *W. Whitman Bailey.*

To the Editor of GARDEN AND FOREST:

Sir.—During a recent visit to the Island of Santa Cruz, one of the islands forming the southerly wall of the Santa Barbara Channel, on the coast of California, I found *Polypodium Scouleri, H. & G.*, growing on the basaltic rocks of which the island is largely composed.

This Fern, so far as I know, has not been heretofore noted from any locality within a distance of perhaps 200 miles north, and not at all from the south, except by Dr. Palmer, who reported it from Guadeloupe Island, off the coast of Mexico.

Santa Barbara, Cal. *Lorenzo G. Yates.*

To the Editor of GARDEN AND FOREST:

Sir.—Allow me to call your attention to the desirability of *Baccharis halmifolia* for cultivation as an autumn-blooming plant in shrubberies. It occurs somewhat abundantly on Buzzard's Bay, along the west shore of the Town of Dartmouth, and the fertile plants are very attractive in September. I do not remember to have ever noticed this shrub in cultivation, although we have few more attractive ones in its season. From its habit it would appear better if planted among other shrubs than strictly alone. Although a plant of the lands adjoining the sea, yet I have seen occasional specimens along the roadsides several miles inland.

South Framingham, Mass. *E. Lewis Sturtevant.*

Periodical Literature.

In a recent number of the *Cornhill Magazine* is an article on "Weeds" so amusingly written that it is a delight to receive the information it imparts. "As dirt," says the author, "is matter in the wrong place, so, I take it, a weed is simply an herb or flower which grows where the agriculturist does not want it." Humble ugliness does not make a weed, nor does beauty prevent the name from being deserved. An instance in point is cited: the blue Ageratum, which is a cherished border flower in England, but which, transported to Ceylon by an English lady, has there become, in truth, a weed, so rapidly running wild in the island that it now costs over a million and a quarter dollars annually to keep it down in the Coffee plantations. Again, Clover "is a 'crop' where it is deliberately sown; but when it comes up lawlessly of its own mere motion in a flower-bed on the lawn," then it is a weed. "Hence, it also results that a weed, wherever it shows its weedy nature, belongs to what Darwin used to call 'a dominant species'—that is to say, one that then and there can take care of itself and live down or kill out all feebler constitutions. It is this vivacious peculiarity that constitutes the original sin of all weeds; they are plants that you don't want to grow, but that, nevertheless, possess qualities and attributes which enable them to oust and overshadow those that you do. . . . Therefore, cultivation . . . consists essentially in the suppression of weeds, or, in other words, the restriction of free and natural competition." But, as the author goes on to explain, this refers merely to competition in "free, open situations." A forest or woodland herb is not a weed, because it does not compete with our crops or garden plantations. Such plants may be "weeds at heart"—that is, pushing monopolists—but they are not weeds in fact. "Man tills only the plain; and, therefore, it is only the wild herbs which naturally grow in the full eye of day that can compete at an advantage with his Corn, his Turnips, his Beet-root or his Sugar-cane. Hence arises a curious and very interesting fact, that the greater part of the common weeds of western Europe and America are neither west European nor American at all, but Asiatic, or, at least, Mediterranean in type or origin. . . . The reason is obvious. Western Europe and eastern America, in their native condition, were forest-clad regions. . . . Now, the wild flowers and plants that grow beneath the shades of the forest primeval won't bear the open heat of the noonday sun. The consequence is, that whenever the forest primeval is cleared, a new vegetation usurps the soil, a vegetation which necessarily comes from elsewhere." Any one who has even glanced through Gray's "Manual" knows how true this is of our eastern states; but it is a less familiar fact that, in recent years, certain American plants are running wild as weeds in Europe. "A return wave," as our author expresses it, "from west to east is actually in progress; and . . . promises in the end to assume gigantic proportions. Many years ago the great Boston botanist, Asa Gray, prophesied its advent, and his prophecy has since gone on fulfilling itself at the usual rapid rate of all American phenomena, social or natural." This new class of emigrants, be it noted, come chiefly from the far west—from those parts of our continent which have always been a vast stretch of treeless prairie land, clothed with plants habituated to the open sky. From the western they have begun to pass to the eastern states, and thence across the Atlantic. Our author believes that they will soon, "in virtue of their sturdier and stringier prairie constitution, habituated to long drought or broiling sunshine, live down those damp-loving and dainty cis-Atlantic weeds" which now occupy the soil of eastern America, and, once on the other side of the ocean, "will, in many cases, almost entirely swamp our native vegetation. In fact, I think there can be little doubt that, with the increase of intercourse all over the world, a few hardy cosmopolitan weeds must tend in the long run to divide the empire of life and map out the cultivable plains of the globe between them. . . . I don't doubt that in time these picked weeds of all the open lowland regions, but more especially of the pampas, the steppes and the veldt, will overrun the greater part of the habitable globe. They are the fittest for their own particular purpose, and fitness is all that nature cares about. We shall thus lose a great deal in picturesque variety between country and country. . . . *Toujours perdrix* is bad enough, but *toujours lait-d'âne*—always Sow-thistle—is surely something too horrible to contemplate."

Three American weeds are then cited as having already made good their hold in England. "One of them, the latest comer, a harmless little Claytonia from the north-western states, is spreading visibly every year under my own eyes in my own part of Surrey. Thirty years ago Mr. Brewer, of Reigate, noted with interest in his garden at that town the appearance of a small exotic Veronica; the 'interesting' little plant is now by far a commoner pest in all the fields of southern England than almost any of our native Knot-weeds, Thistles or Charlocks. The Peruvian Galinsoga . . . has spread immensely in Italy and the Riviera and now grows quite commonly wild on the road-sides about Kew, whence it will sweep in time with devouring effect upon the surrounding countries." Of course, man can almost always succeed in the fight against weeds, "but his commercial and agricultural success will be but a small consolation, after all, to the lover of nature for that general vulgarization and equalization of the world's flora, which universal culture and increased intercourse must almost of necessity bring in their train to every quarter of the habitable globe."

It is interesting also to note that many plants which spread with a new rapidity in a new soil likewise develop as individuals in an unprecedented way. For example, the "petty English Knot-grass, which at home is but an insignificant roadside trailer, thrives in the unencumbered soil of New Zealand so hugely that single weeds sometimes cover a space five feet in diameter and send their roots four feet deep into the rich ground." And the Water-cress of our breakfast-tables, "in Europe a mere casual brook-side plant, chokes the New Zealand rivers with stems twelve feet long, and costs the colonists of Christ Church alone £300 a year in dredging their Avon free from it." As a proof that the battle is not always to the seemingly strong, we may quote the instance of the White Clover, which "has completely strangled its immense antagonist, the New Zealand Flax, a huge Iris-like Aloe, with leaves as tall as a British grenadier and fibres powerful enough to make cords and ropes fit to hang a sheep stealer."

Journal of the Royal Horticultural Society, edited by G. D. Morris and the Reverend W. Wilkes.

The high standard of the recent numbers of this journal show how real and successful the efforts of the friends of horticulture in England have been in restoring to this Society the character it enjoyed, and the usefulness it exerted fifty years ago. The best work such societies can perform in the present stage of horticulture is in promoting investigations and discussions on subjects of practical importance; and then in making the results of such discussions available to the world by publication in cheap and convenient form. That the Royal Horticultural Society is now doing this, a mere glance at the list of papers, and the names of their authors, published in this last part which has reached us, will make abundantly apparent.

There are three papers on Saxifrage, which are treated both from a scientific point of view by Mr. J. G. Baker, of the Kew herbarium, and culturally by Mr. George Paul and Mr. G. Reuthe. These are followed by three papers on the Hyacinth; Mr. Burbidge contributes a paper on the Narcissus, which is followed by a discussion of seedling Daffodils by the Rev. G. H. Engleheart, and by observations on Portuguese Narcissi by Mr. Alfred W. Tait. The Rev. Mr. Horner discusses the Auricula; and the number concludes with Mr. Veitch's admirable paper on Orchids, past and present, to which reference has already been made in these columns.

Notes.

Good hot-house grapes are retailing in New York at two dollars a pound.

On several plants of *Clematis paniculata*, observed near this city, the foliage remained green through the hard frosts of autumn and well into December.

The business of forcing bulbs for the market was so much overdone in this country last year that florists have bought more cautiously this fall. On the other hand, a combination of growers in southern Europe compelled importers to pay high prices for these bulbs, and as a consequence many Roman Hyacinths and other bulbs have been sold at less than cost.

At a ball given lately in Providence the three débutantes, in whose honor it was made, received from their friends 110 hand-bouquets. The money value of these flowers must have been, at current retail prices, not far from $1,800. The fact is worth noting, as an indication of the lavish use and tremendous demand for flowers in this community.

In the *Bulletin de la Société Botanique de France*, M. Doumet Adanson describes a Fir which he considers a hybrid between *Abies Pinsapo* and *A. pectinata* as the pollen parent. The plant shows the distichous arrangement of leaves which characterizes *A. pectinata*, while the leaves themselves resemble those of *A. Pinsapo*.

William H. Moffett, United States Consul at Athens, reports the impossibility of making any official statement as to the agriculture of Greece, because "agriculture is here in the most undeveloped condition. Even in the immediate neighborhood of Athens it is common to find the wooden plow and the rude mattock which were in use 2,000 years ago. Fields are plowed up or scratched over, and crops replanted season after season, until the exhausted soil will bear no more. Fertilizers are not used to any appreciable extent, and the farm implements are of the very rudest description. Irrigation is in use in some districts, and, as far as I can ascertain, the methods in use can be readily learned by a study of the practices of the ancient Egyptians. Greece has olives and grapes in abundance, and of quality not excelled; but Greek olive oil and Greek wine will not bear transportation."

The northern suburbs of London will shortly be enriched by a fine park, presented by Sir Sydney H. Waterlow. In a letter addressed to the London City Council, the donor writes: "On the southern slope of Highgate Hill, in the parish of St. Pancras, I own an estate of nearly twenty-nine acres in extent, which was for many years my own home. This property, if judiciously laid out, would, I think, make an excellent public park for the north of London. The grounds are undulating, well timbered with Oaks, old Cedars of Lebanon, and many other well grown trees and shrubs. There is also one and a half acres of ornamental water, supplied from natural springs. The land is freehold, with the exception of two and three-quarters acres held on a long lease, of which thirty-five and a half years are unexpired. It is bounded almost entirely by public roads and a public foot-path."

A Cotoneaster, which has not flowered there yet, received at the Arnold Arboretum some time ago from the Veitchian nursery, under the name of *C. bacillaris floribunda*, is a remarkable and interesting plant at this season of the year. The foliage on the 1st of December was fresh and bright green, and on the 6th of the month, when all the deciduous leaved plants in the collection, with the exception of *Elæagnus umbellata* and two or three others, on all of which they were already much wilted and disfigured, had lost their leaves, those of this Cotoneaster, although they had been subjected to a temperature as low as ten degrees above zero, were just turning to a deep, rich wine color. This shrub, whatever its name and origin may be, is certainly worth growing for its late autumn and early winter foliage. It is vigorous and very hardy, of good habit, with large, acuminate, membranaceous leaves, and slender, spreading branches, covered with bright green bark, which at this season of the year turns claret color on the side toward the sun. It has the appearance of growing to a large size.

Professor Comstock, in a late Bulletin of the Cornell University station, gives an interesting account of a saw-fly borer which attacked the Wheat on the station ground in great numbers this year. The insect (*Cephus pygmæus*) is well known in Europe, where it has been considered a serious pest. This is the first time, however, that it has ever been observed in this country. European entomologists describe parasites which infest this insect, but Professor Comstock found no trace of any among those in the station Wheat field. Artificial means for checking the spread of this species must, therefore, be depended on. The burning over of the stubble or plowing it under after harvest would destroy the larvæ, but either remedy would also destroy the Grass or Clover usually sown with Wheat. It seems probable, therefore, that if the insect becomes a serious pest it will be necessary in badly infested regions either to sow Grass seed with Oats and burn or plow all Wheat stubble, or to suspend the raising of Wheat for one year, in order to destroy the insects by starvation.

A correspondent sends us the following note upon *Magnolia glauca* in its isolated northern station in Essex County, Massachusetts: "Magnolia Swamp contains several hundred acres, and it is one and a half miles in length and from ten to over 100 rods in width. I am of opinion that this swamp has furnished the shrub to all the others. In regard to three of the smaller swamps I know that this is a fact, the Magnolia shrubs having been transplanted by men. The inhabitants of Gloucester are firm in the belief that *Magnolia glauca* is a native shrub, but I cannot think so. I believe it was introduced by the old settlers, some of whom may have lived in and removed from a more southern state. 'The old Salem road,' deserted by the traveling public for over 100 years, skirts the eastern side of Magnolia Swamp. Along the line of this road are the ruins of old cellars, and in the swamp opposite one of the cellars, near a spring, may be found Magnolias which appear the oldest in the region. The root-crowns below the moss are often found to be two feet in diameter. In no other place can I find such a growth, and it is here, I think, that the shrub first started. It must be evident to any careful observer that *Magnolia glauca* is struggling here in an unnatural climate. The primary roots grow straight down into the muck, and in the fall are thickly covered with rootlets, snowy white in color. In the spring these rootlets are mostly dead, and a greater part of young shoots die down to the moss, and a certain per cent. of the old plants are winter-killed, which indicates that there is no harmony between shrub and climate."

The fruit of the Japanese Persimmon or Kaki can still be found in the markets of this city in great abundance, and of extraordinary beauty and excellence. It is raised in Florida and Georgia, where the Kaki has been planted in large quantities. It is by far the handsomest dessert fruit which the market affords at this season of the year; but it is a question whether the kaki really possesses as good a flavor as one of our thoroughly ripened and frosted native persimmons from Georgia or Virginia, a fruit which some people consider about the best that grows. A cross between the American and Japanese species might be expected to produce a fruit of larger size and finer color than that of the former, and with a richer flavor than any of the cultivated forms of Kaki. The Asiatic Persimmon, according to Rein, is "undeniably the most widely distributed, most important and most beautiful fruit tree in Japan, Corea and northern China. In Japan it endures night frosts at a temperature of from twelve to sixteen degrees C. It can be cultivated high up in the valleys and far beyond the limit of the Bamboo cane. It is a stately tree, after the fashion of a Pear-tree, with beautiful deciduous leaves, almost as large as those of some Magnolias, but of bright green color and resembling those of the Pear in shape only. The new leaves come in May; it blossoms in June; the season of ripe fruit is late in autumn, from the middle of September to the end of November. There are many kinds of Kaki, ranging in size from a small hen's egg to a big apple. Some are nearly spherical, others oblong, others heart-shaped. In color of the outer skin they run from light orange-yellow to deep orange-red. They are distinguished also by their taste, which is pleasant in its way and reminds one of tomatoes, as does the color also. They are eaten not only in a soft, doughy condition, in which those of the Migako-no-djó, in the province Hiuga, are prized most highly, but the fruit is gathered while still hard, to ripen afterward. The best in Japanese estimation are *Tarugaki*, that is, 'Tub Persimmons,' which have been converted from astringent into sweet fruit by being kept in an old saké tub. The bitter, astringent taste of all green kaki remains, even in the ripe fruit, in the case of most varieties, and it is from these that, during the summer, an astringent fluid, rich in tannin, is prepared (called Shibu), an acid of considerable importance in several industries. When over-ripe and dried in the sun, pressed somewhat flat, and then put away in boxes, the sweet kaki get to look and taste, in a few months, when skinned, like dried figs, and are used like them. The white powder which covers these dried persimmons in boxes is natural sugar that has exuded from the fruit. "In September the Kaki tree, laden with large, orange colored fruit, is a great ornament to the landscape. This beauty it preserves till it loses its leaves in October."